

# **RESULTS OF THE 2002 HAWAII HELMET USE SURVEY**

Report to the Department of Transportation  
State of Hawaii

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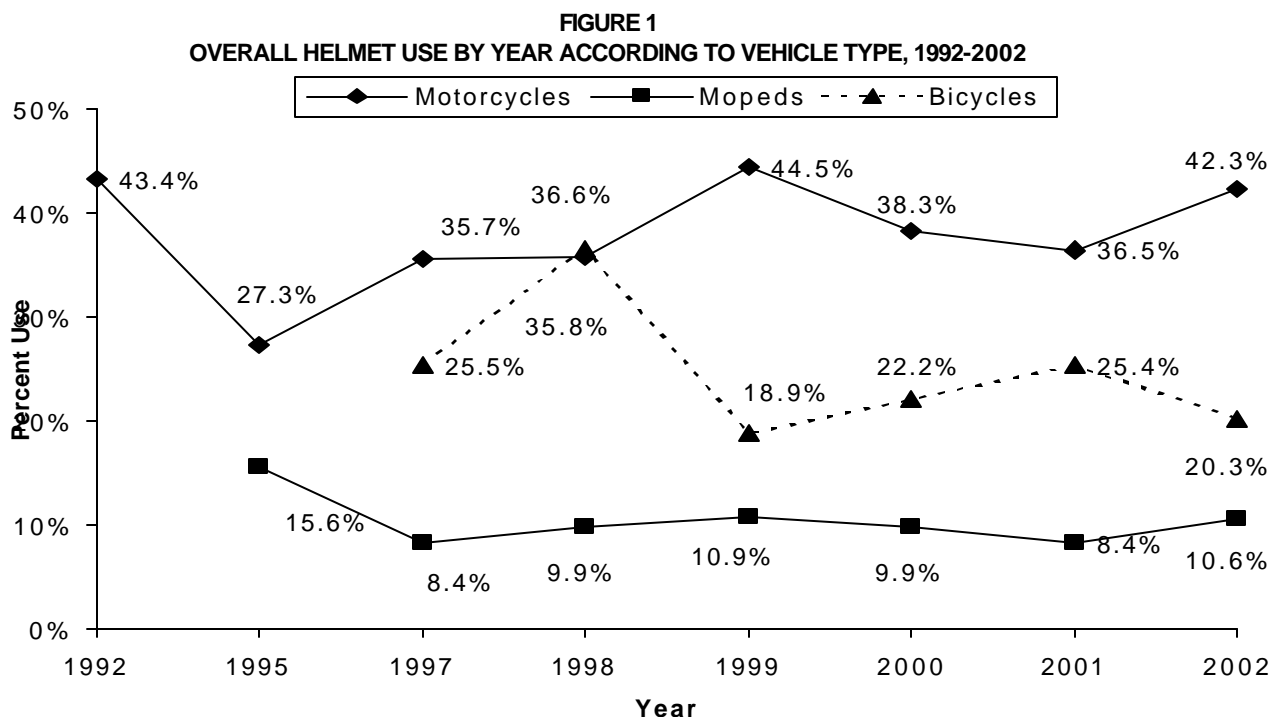
## **I. INTRODUCTION**

This report contains the results of the 2002 Hawaii State Helmet Use Survey. During the 2001 Legislative Session, a new law (HRS§291C-150) requiring helmet use among bicycle riders under the age of 16 was enacted. Parents or guardians of youth in violation of the law can be levied a fine of up to \$25. Prior to this most recent legislation, Hawaii had no law requiring helmet use for either operators or passengers of motorcycles, mopeds, and bicycles.

Data were collected statewide and analyzed by the University of Hawaii's Department of Urban and Regional Planning (DURP). Field surveys were conducted at 136 sites on the islands of Oahu, Maui, Hawaii, and Kauai between January and March of 2002. The methodology and selection criteria were based on studies conducted from 1985 through 2001. The 2002 survey includes helmet use observations of 1,390 motorcyclists, 358 moped riders, and 591 bicyclists.

## **II. SUMMARY**

Gains were made in helmet use rates among motorcyclists and moped riders. However, helmet use rates dropped among bicyclists. The overall helmet use rate for motorcyclists in 2002 was 42.3%, increasing from the 36.5% observed in 2001. Amongst moped riders, helmet use rates rose from 8.4% in 2001 to 10.1% in 2002. Helmet use among observed bicyclists decreased from 25.4% in 2001 to 20.3% in 2002. Figure 1 illustrates the results.



### III. METHODOLOGY

A total of 136 observation sites were selected, with 66 sites on Oahu, 24 on Maui, 24 on Hawaii, and 22 on Kauai. Observations were conducted in tandem with seat belt use observations. Teams of two spent approximately 40 minutes during daylight hours at each site recording helmet use. One person observed helmet use while the other person entered the data into Palm handheld computers—which replaced paper survey forms used in previous years. The data were then analysed at DURP using SAS, a statistical software package.

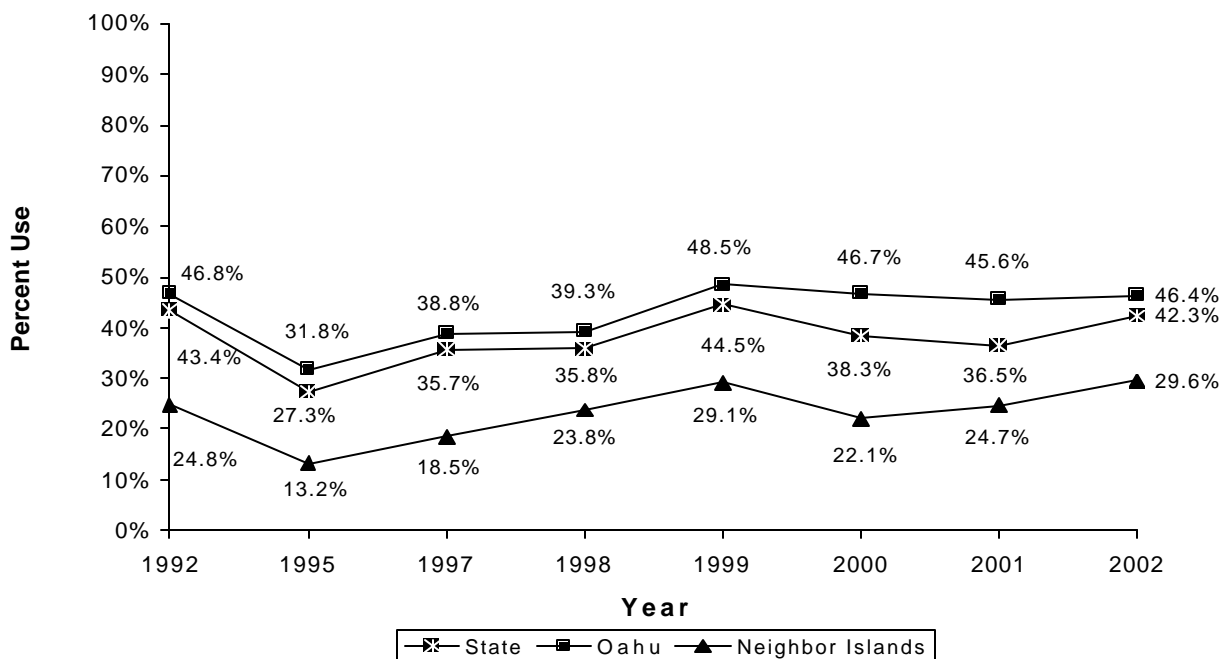
### IV. FINDINGS

The analysis of the helmet use survey is divided into three different results for each of the following vehicle types: (1) motorcycles; (2) mopeds; and (3) bicycles.

#### (1) MOTORCYCLES

Helmet use among motorcyclists increased from 36.5% in 2001 to 42.3% in 2002. As in previous years, Oahu's use rate (46.4%) was considerably higher than the use rate among riders on the neighbor islands (29.6%). However, helmet use on the neighbor islands improved from previous years, and a new peak for helmet use on the neighboring islands was established in 2002. These results are shown in Figure 2.

**FIGURE 2**  
**MOTORCYCLE HELMET USE BY YEAR ACCORDING TO LOCATION, 1992-2002**



Motorcycle helmet use on the four major islands varied. Once again, the highest rates of helmet use were observed on Oahu (46.4%), followed by Hawaii (35.8%), Maui (32.2%), and Kauai (19.4%). However, a noticeable difference among passenger helmet use rates was observed during the 2002 survey. In previous years, operators have been helmeted more frequently than passengers. This year, the state wide results support this trend—with 43.9% of motorcycle operators and 29.3% of passengers observed wearing helmets. Interestingly, however, motorcycle passengers on the islands of Hawaii and Maui were helmeted more frequently than motorcycle operators. On Hawaii, 38.5% of passengers were helmeted, while only 35.5% of operators were helmeted. On Maui, 35.7% of passengers were helmeted, while only 31.6% of operators wore a helmet. Table 1 details these findings.

**TABLE 1**  
**MOTORCYCLE HELMET USE BY ISLAND, 2002**

FACTORS	OPERATOR		PASSENGER		TOTAL	
	Total Observed	Percent Helmeted	Total Observed	Percent Helmeted	Total Observed	Percent Overall Helmeted
<b>ISLAND</b>						
Oahu	954	47.9%	101	31.7%	1,055	<b>46.4%</b>
Maui	76	31.6%	14	35.7%	90	<b>32.2%</b>
Hawaii	124	35.5%	13	38.5%	137	<b>35.8%</b>
Kauai	86	22.1%	22	9.1%	108	<b>19.4%</b>
Neighbour Islands	286	30.4%	49	24.5%	335	<b>29.6%</b>
State	1,240	43.9%	150	29.3%	1,390	<b>42.3%</b>

Figure 3 shows the difference in helmet use between each district on Oahu. Since 2001, helmet use rates in Honolulu, (51.7%), Ewa (57.5%), Waialua (42.1%), Wahiawa (46.7%), and Koolaupoko (56.1%) increased. The use rate in Koolauloa (17.2%) declined dramatically. A decrease was also observed in Waianae (21.8%).

**FIGURE 3**  
**MOTORCYCLE HELMET USE BY DISTRICTS ON OAHU, 2001 and 2002**

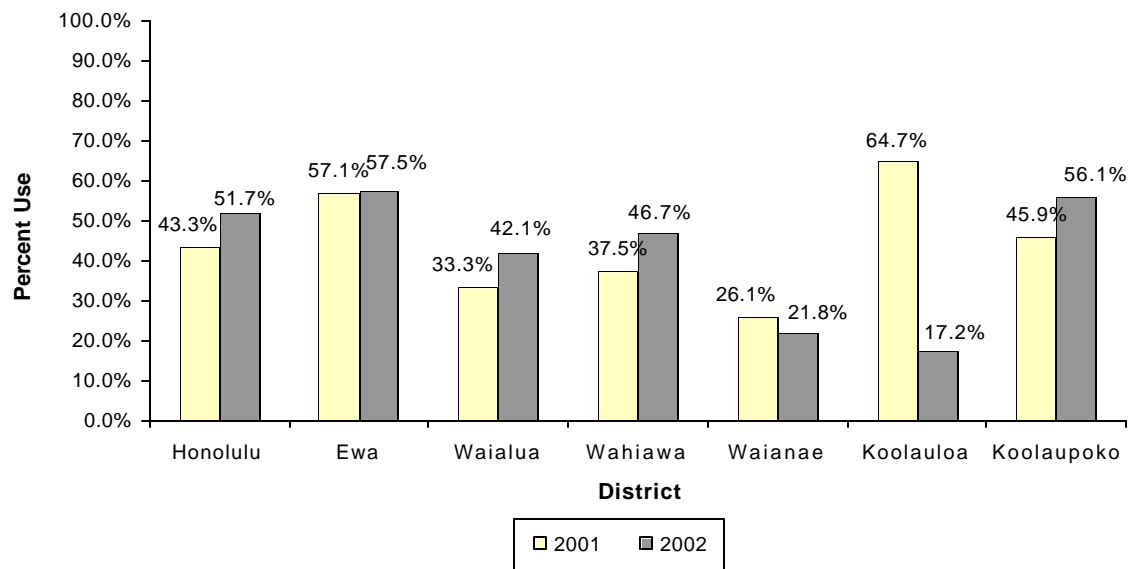


Table 2 provides a breakdown of helmet use among motorcyclists according to time of day, vehicular volume, weather condition, vehicular speed, number of lanes, and day of the week. See Appendix 1 for a complete table.

**TABLE 2**  
**MOTORCYCLE HELMET USE ACCORDING TO VARIOUS FACTORS, 2002**

FACTORS	OPERATOR		PASSENGER		TOTAL	
	Total Observed	Percent Helmeted	Total Observed	Percent Helmeted	Total Observed	Percent Overall Helmeted
<b>TIME PERIOD</b>						
7:00 AM - 10:59 AM	262	36.6%	38	23.7%	300	35.0%
11:00 AM - 2:59 PM	439	35.1%	63	27.0%	502	34.1%
3:00 PM - 7:00 PM	539	54.6%	49	36.7%	588	53.1%
<b>VOLUME</b>						
Low volume	22	27.3%	2	50.0%	24	29.2%
High volume	1,218	44.2%	148	29.1%	1,366	42.5%
<b>WEATHER</b>						
Sunny	986	40.8%	114	28.1%	1,100	39.5%
Partly Cloudy	185	61.6%	30	33.3%	215	57.7%
Cloudy	69	40.6%	6	33.3%	75	40.0%

<b>SPEED</b>						
Below 25 MPH	374	29.7%	62	27.4%	436	<b>29.4%</b>
25 - 34 MPH	162	42.6%	17	23.5%	179	<b>40.8%</b>
35 - 44 MPH	367	49.6%	38	31.6%	405	<b>47.9%</b>
45 - 54 MPH	204	50.5%	24	25.0%	228	<b>47.8%</b>
55 or more MPH	133	59.4%	9	55.6%	142	<b>59.2%</b>
<b>LANES</b>						
One Lane	191	35.6%	31	29.0%	222	<b>34.7%</b>
Two Lanes	420	33.6%	56	23.2%	476	<b>32.4%</b>
Three Lanes	418	57.9%	34	41.2%	452	<b>56.6%</b>
Four Lanes	146	44.5%	15	33.3%	161	<b>43.5%</b>
Five lanes	65	43.1%	14	21.4%	79	<b>39.2%</b>
<b>WEEK</b>						
Weekday	574	54.5%	52	19.2%	626	<b>51.6%</b>
Weekend	666	34.7%	98	34.7%	764	<b>34.7%</b>

## (2) MOPEDS

The helmet use rate among Oahu's moped riders increased slightly from 9.8% in 2001 to 12.1% in 2002. Once again, however, the use rate on the neighbor islands decreased dramatically, dropping from 7.6% in 2001 to 2.6% in 2002. Use rates on the neighboring islands did not prevent the overall state helmet use rate from rising. Moped helmet use increased from 8.4% (2001) to 10.1% (2002). Figure 4 below shows the use rate trends.

**FIGURE 4**  
**MOPED HELMET USE, 1995-2002**

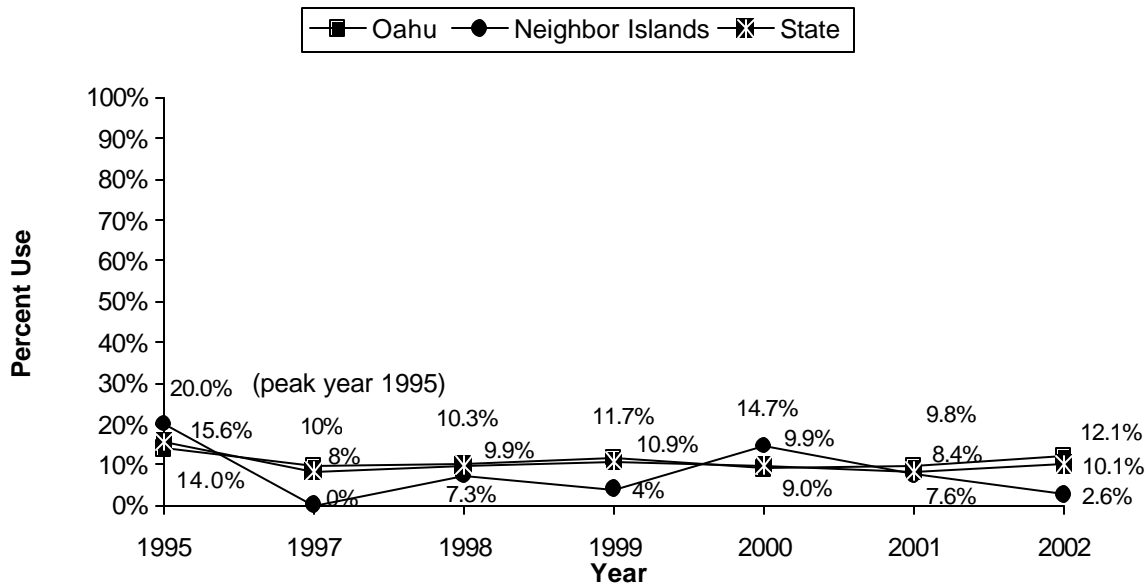


Table 3 characterizes helmet use among moped riders by individual and grouped islands.

**TABLE 3**  
**MOPED HELMET USE BY ISLAND, 2002**

FACTORS	OPERATOR		PASSENGER		TOTAL	
	Total Observed	Percent Helmeted	Total Observed	Percent Helmeted	Total Observed	Percent Overall Helmeted
<b>ISLAND</b>						
Oahu	279	11.8%	3	33.3%	282	12.1%
Maui	18	0.0%	0	0.0%	18	0.0%
Hawaii	49	4.1%	5	0.0%	54	3.7%
Kauai	4	0.0%	0	0.0%	4	0.0%
Neighbour Islands	71	2.8%	5	0.0%	76	2.6%
State	350	10.0%	8	12.5%	358	10.1%

Helmet use rates are categorized in Table 4 by various factors that may influence moped helmet use. These factors include helmet use rate by time period, vehicular volume, weather condition, vehicular speed, number of lanes, and day of the week. See Appendix 2 for a complete table.

**TABLE 4**  
**MOPED HELMET USE ACCORDING TO VARIOUS FACTORS, 2002**

FACTORS	OPERATOR	PASSENGER	TOTAL
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	Total Observed	Percent Helmeted	Total Observed	Percent Helmeted	Total Observed	Percent Overall Helmeted
<b>TIME PERIOD</b>						
7:00 AM - 10:59 AM	83	9.6%	2	0.0%	85	<b>9.4%</b>
11:00 AM - 2:59 PM	100	10.0%	4	25.0%	104	<b>10.6%</b>
3:00 PM - 7:00 PM	167	10.2%	2	0.0%	169	<b>10.1%</b>
<b>VOLUME</b>						
Low Volume	22	18.2%	1	0.0%	23	<b>17.4%</b>
High Volume	328	9.5%	7	14.3%	335	<b>9.6%</b>
<b>WEATHER</b>						
Sunny	278	7.9%	4	0.0%	282	<b>7.8%</b>
Partly Cloudy	61	19.7%	1	100.0%	62	<b>21.0%</b>
Cloudy	11	9.1%	3	0.0%	14	<b>7.1%</b>
<b>SPEED</b>						
Below 25 MPH	94	5.3%	4	0.0%	98	<b>5.1%</b>
25 - 34 MPH	147	10.2%	2	50.0%	149	<b>10.7%</b>
35 - 44 MPH	104	12.5%	2	0.0%	106	<b>12.3%</b>
45 - 54 MPH	4	50.0%	0	0.0%	4	<b>50.0%</b>
55 MPH	1	0.0%	0	0.0%	1	<b>0.0%</b>
<b>LANES</b>						
One Lane	43	16.3%	4	0.0%	47	<b>14.9%</b>
Two Lanes	108	7.4%	1	0.0%	109	<b>7.3%</b>
Three Lanes	143	10.5%	2	50.0%	145	<b>11.0%</b>
Four Lanes	39	7.7%	1	0.0%	40	<b>7.5%</b>
Five Lanes	17	11.8%	0	0.0%	17	<b>11.8%</b>
<b>WEEK</b>						
Weekday	196	11.7%	2	50.0%	198	<b>12.1%</b>
Weekend	154	7.8%	6	0.0%	160	<b>7.5%</b>

### (3) BICYCLES

The results of the 2002 Helmet Use Survey shows that the statewide helmet use rate among bicyclists has decreased, due to the dramatic decrease in helmet use on Oahu. Figure 5 shows that statewide helmet use among bicyclists decreased from 25.4% in 2001 to 20.3% in 2002. On Oahu, helmet use



significantly decreased from 32.0% in 2001 to 14.7% in 2002. Meanwhile, a new peak for helmet use rates among outer island bicyclists was established at 43.5%. Figure 5 illustrates these trends.

**FIGURE 5**  
**BICYCLE HELMET USE, 1997-2002**

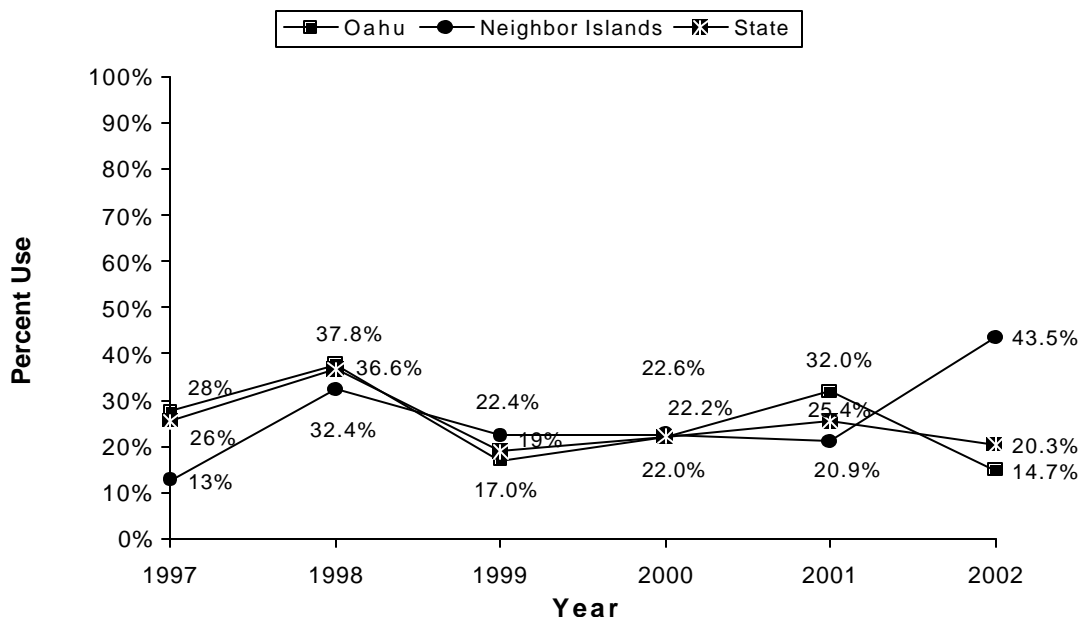


Table 5 shows the variation in helmet use among bicyclists by island. The lowest helmet use rate was observed on Oahu, where the majority of bicyclists were observed. Only 14.7% of riders observed were helmeted. Maui, however, reported the highest percentage of helmeted riders, with 66.7% of those observed helmeted. On Kauai, 37.9% of bicyclists were helmeted, and on Hawaii, 27.7% wore a helmet. A complete table is provided in Appendix 3 of this report.

**TABLE 5**  
**BICYCLE HELMET USE BY ISLAND, 2002**

FACTORS	DRIVER	PASSENGER	TOTAL
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	Total Observed	Percent Helmeted	Total Observed	Percent Helmeted	Total Observed	Percent Overall Helmeted
<b>ISLAND</b>						
Oahu	471	14.9%	5	0.0%	476	14.7%
Maui	39	66.7%	0	0.0%	39	66.7%
Hawaii	47	27.7%	0	0.0%	47	27.7%
Kauai	28	35.7%	1	100.0%	29	37.9%
Neighbour Islands	114	43.0%	1	100.0%	115	43.5%
State	585	20.3%	6	16.7%	591	20.3%

Table 6 summarizes those factors that may influence helmet use among bicyclists, including difference by time period, vehicular volume, weather condition, vehicular speed, number of lanes, and day of the week.

**TABLE 6**  
**BICYCLE HELMET USE ACCORDING TO VARIOUS FACTORS, 2002**

FACTORS	OPERATOR		PASSENGER		TOTAL	
	Total Observed	Percent Helmetered	Total Observed	Percent Helmetered	Total Observed	Percent Overall Helmetered
<b>TIME PERIOD</b>						
7:00 AM - 10:59 AM	160	16.9%	1	0.0%	161	<b>16.8%</b>
11:00 AM - 2:59 PM	198	19.2%	5	20.0%	203	<b>19.2%</b>
3:00 PM - 7:00 PM	227	23.8%	0	0.0%	227	<b>23.8%</b>
<b>VOLUME</b>						
Low Volume	31	22.6%	1	0.0%	31	<b>22.6%</b>
High Volume	554	20.2%	5	16.7%	560	<b>20.2%</b>
<b>WEATHER</b>						
Sunny	437	22.2%	5	0.0%	442	<b>22.0%</b>
Partly Cloudy	121	15.7%	1	100.0%	122	<b>16.4%</b>
Cloudy	27	11.1%	0	0.0%	27	<b>11.1%</b>
<b>SPEED</b>						
Below 25 MPH	148	17.6%	3	0.0%	151	<b>17.2%</b>
25 - 34 MPH	271	13.7%	2	50.0%	273	<b>13.9%</b>
35 - 44 MPH	134	29.1%	1	0.0%	135	<b>28.9%</b>
45 - 54 MPH	31	54.8%	0	0.0%	31	<b>54.8%</b>
55 or more MPH	1	0.0%	0	0.0%	1	<b>0.0%</b>
<b>LANES</b>						
One Lane	113	38.1%	2	50.0%	115	<b>38.3%</b>
Two Lanes	156	19.9%	3	0.0%	159	<b>19.5%</b>
Three Lanes	183	17.5%	0	0.0%	183	<b>17.5%</b>
Four Lanes	111	7.2%	1	0.0%	112	<b>7.1%</b>
Five Lanes	22	22.7%	0	0.0%	22	<b>22.7%</b>
<b>WEEK</b>						
Weekday	317	24.6%	1	100.0%	318	<b>24.8%</b>
Weekend	268	15.3%	5	0.0%	273	<b>15.0%</b>

## **V. CONCLUSION AND RECOMMENDATIONS**

The 2002 Helmet Use Survey reveals differences in use rates between vehicle types. While the use rates for both motorcycle and moped populations have decreased this year, the bicycle helmet use rate has increased. Hence, the current findings in the 2002 Helmet Use Survey lead to several important recommendations:

- (1) Research needs to be tailored to examine compliance with the newly enacted helmet law among youth. In addition, in order for the helmet law to work effectively, enforcement and public education need to occur.
- (2) A study examining the reasons for consistently low helmet use rates among moped rider's needs to be conducted.
- (3) Further study is necessary to understand the relationship between helmet use rates, rider characteristics (such as, age, gender, and socio-economic status), and vehicle type. Low helmet use among moped riders, for example, may be associated with rider characteristics of those who operate mopeds. Further study is necessary to determine if such a relationship exists.
- (4) Programs of public education and public information should be developed in order to increase helmet use—especially among moped riders.

## **APPENDIX C1-C3**